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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/076,519	02/19/2002	Tadashi Enomoto	49677-112	1687

7590 06/28/2004

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Washington, DC 20005-3096

EXAMINER
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HOFFMANN, JOHN M

ART UNIT	PAPER NUMBER
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1731

DATE MAILED: 06/28/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

**Application No.**

10/076,519

**Applicant(s)**

ENOMOTO ET AL.

**Examiner**

John Hoffmann

**Art Unit**

1731

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-7 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-7 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_.

***Drawings***

Figures 2a, 2b and 4 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). Corrected drawing sheets are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 6-7 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The term "soot preform" is of confusing antecedent basis, as is "the diameter of claim 6.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

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(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-3 and 5-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nouchi 5675690 or Grubb 6118575 in view of Powers 4378985, Terasawa 6295843, Watanabe 4915717, and Oyamada 6145344.

Nouchi (at col. 4, line 13) and Grubb (at fig 2 and col. 5, lines 43 and 50-57) disclose fibers which have thicknesses/diameters which correspond to those claimed. However, there is no indication of the forming of the preforms as claimed. The secondary references disclose making preforms in the manner claimed: see Oyamada figure 1; Powers, figure 4; Terasawa figure 7A, and Watanabe figure 1. IT would have been obvious to use any of those prior art methods to make the Nouchi or Grubb fibers – because they are well known methods for making fibers and for any of their well known advantages.

Alternatively, one can use Nouchi or Grubb as secondary references as follows. Oyamada, Powers, Terasawa and Watanabe disclose the making of the fibers – but not any particular dimensions. It would have been obvious to use the Nouchi or Grubb profiles in the process, for the distinct optical properties that Nouchi and Grubb disclose.

It would have been further obvious to make the preform layers in the same diameter ratios as desired in the final product. For example Nouchi has a fiber with diameters of 2.1, 4.2, and 8.4 diameters (i.e. a ratio of 1:2:4). One would make a preform with diameters/thicknesses with that same 1:2:4 ratio – because conservation of mass would dictate that too have the final ratio, one would start out with the same

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ratio. It is noted, that such assumes that each feature has the same density, because if the densities were different, when the soot bodies are sintered, there would be different shrinkages. But since the references uses substantially identical deposition techniques for each burner, one would expect substantially identical densities.

As a specific example of the combination: Teresawa's figure 7A and Nouchi, col 4, line 13: 112, 122, 132 and 212 (all of Teresawa) would correspond respectively with  $r_{21}$ ,  $r_{22}$ ,  $r_{23}$  and  $r_{24}$  of Nouchi. If glass rod 112 had a diameter of  $x$ , primary soot preform 122 would have a diameter of  $2x$ , and the secondary sot preform 212 would have a diameter of  $4x$ . The ratios of diameters would be  $(2x/x)^2$  and the ratio of thicknesses would be  $4x/2x = 2$ .

It is noted that Nouchi also has a diameter of 7.06. This is not very relevant because the claims are comprising in nature thus do not preclude such.

Claim 2 is clearly met.

Claim 3: See figure 5 (and the associated text) of Oyamada (and even figures 4-5 of Watanabe). Those figures show openings of different diameters. Thus using duplicate burners, there the secondary burner would have at least one opening diameter that is larger than at least one opening diameter of the primary burner.

Claim 5: as per col. 6, lines 13-19: the angle with the horizontal should not exceed 60 degrees and is not pointed downwards – this corresponds to the claimed angle of 30 –90. Regardless, it is clear that the burner angle is a result-effective variable. It would have been obvious to perform routine experimentation to determine

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the optimal burner angle. It is also noted that figure 7A of Teresawa shows all burners that are about 45 degrees.

As to claim 6: as can be seen from figure 4 of Powers, the two burners 60 and 62 can be separated by a distance. In fact, it would have been obvious to have the burners at some distance from each other, so as to prevent the burners from interfering with each other. It would have been obvious to have the burners (as well as the centers of the expanses as far as part as one desires, with no new or unexpected results.

As to claim 7: it would have been obvious to terminate the lower burner prior to terminating the upper burner, because one has to make the inner layers prior to depositing the outer layers – otherwise there is nothing to deposit the outer layers upon. And there would be no reason to continue making the inner cores longer than what is needed – such would only add cost.

Claims 3-4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nouchi 5675690 or Grubb 6118575 in view of Powers 4378985, Terasawa 6295843, Watanabe 4915717, and Oyamada 6145344 as applied to claim 1 above, and further in view of Cain 5599371.

The initial references don't disclose the diameters. Cain discloses (figure 3) a high precision burner that can be used with non-chlorine (a poisonous and corrosive element) reactant. It would have been obvious to use Cain burners as the specific burners – for the advantages that Cain discloses. Claim 4: See col. 6, lines 35-36: which

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discloses one diameter of 17 mm and another of 7.9 mm. This would have a ratio between 2 and 5.

### ***Information Disclosure Statement***

The information disclosure statement filed 2/19/02 fails to comply with 37 CFR 1.98(a)(3) because it does not include a concise explanation of the relevance, as it is presently understood by the individual designated in 37 CFR 1.56(c) most knowledgeable about the content of the information, of each patent listed that is not in the English language. It has been placed in the application file, but the information referred to therein has not been considered.

### ***Conclusion***

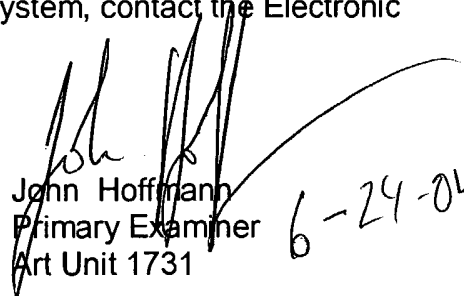
The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Carpenter, Evanslto, Kanamori, Powers '370 and Berkey are cited as being relevant to the disclosed invention.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to John Hoffmann whose telephone number is (571) 272 1191. The examiner can normally be reached on Monday through Friday, 7:00- 3:30.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Steve Griffin can be reached on 571-272-1189. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

  
John Hoffmann  
Primary Examiner  
Art Unit 1731

6-24-04

jmh